BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Band for Government Operations	)	IB Docket No. 97-95
	)	RM-8811

To: The Commission

JOINT REPLY OF TRW INC. AND LOCKHEED MARTIN CORPORATION

TRW Inc. (ATRW≅), through counsel, and Lockheed Martin Corporation (ALockheed Martin≅), pursuant to Section 1.429 of the Commission=s Rules, 47 C.F.R. ' 1.429, hereby reply jointly to the oppositions to TRW=s Petition for Reconsideration/ Clarification (APetition≅) in the above-captioned proceeding. Oppositions were separately filed by WinStar Communications, Inc. (AWinStar≅) and the Fixed Wireless Communications Coalition (AFWCC≅).

In its Petition, TRW expressed its belief that the Commission=s Report and Order in the *V-Band Allocation* proceeding[1] struck an essentially workable balance and had generally made

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[1] *Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz, and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Band for Government Operations*, FCC 98-336 (released December 23, 1998) (A*V-Band Allocation Order*≅).

positive refinements of its initial band plan proposal.[2] TRW, however, called upon the Commission to clarify one critical aspect of the regulatory approach it adopted in its Report and Order in the *V-Band Allocation* proceeding. Specifically, TRW urged the Commission to clarify that the use of any portion of the existing international spectrum allocation for fixed-satellite services (AFSS≅) in the 37.5-42.5 GHz and 47.2-50.2 GHz bands would be permitted so long as (i) such FSS use conformed to power flux density or other applicable limits that are contained in the International Radio Regulations to protect any terrestrial fixed service facilities in these bands, and (ii) the FSS operators agree to accept interference from fixed service operators in those band segments that were designated primarily for terrestrial use in the *V-Band Allocation Order*.[3] The Commission designated spectrum in the existing co-primary FSS and fixed service bands for either fixed or FSS use without requiring the elimination of the domestic allocations to the non-designated service. All the Petition did was request that the Commission make clear that the assignment of licenses to terrestrial fixed service providers does not preclude the use of spectrum in the same bands for the provision of FSS service under the conditions TRW has proposed.[4]

As TRW and Lockheed Martin show in this Joint Reply, both FWCC and WinStar are mistaken in their claims with respect to band segmentation and both provide inaccurate information on the ability of FSS earth stations to operate on a co-frequency basis with high-density V-band fixed service systems. Moreover, WinStar=s call for the total exclusion of satellite

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2 TRW Petition at 4.

3 TRW Petition at 1-2. With the partial exception of the 40.5-42.5 GHz band in parts of ITU Region 1 (Europe/Africa), the band 37.5-42.5 GHz is allocated globally to the FSS for space-to-Earth transmissions, and the band 47.2-50.2 is allocated globally to the FSS for Earth-to-space transmissions.

4 *Id*. at 5.

operations from bands the Commission has designated in the *V-Band Allocation Order* is inefficient and unjustified. The oppositions must, therefore, be rejected.

DISCUSSION

TRW and Lockheed Martin reiterate, at the outset, that they are not seeking reversal of the Commission=s decision, *inter alia*, to establish separate designations for FSS and wireless services.[5] Rather, TRW and Lockheed Martin are urging the Commission to make clear that, in determining not to modify the allocation tables for the bands designated for separate FSS and wireless use, it was determining that shared use of the bands (as per the current domestic and international allocations) is permitted if the designee is protected from interference to the degree contemplated by the Commission=s decision and undue constraints are not placed on the designee.[6]

WinStar, in objecting to TRW=s Petition, interposes objections that range from the anecdotal to the erroneous. The fact that TRW alone has continued to advance its technical contention -- that limited satellite use of those segments of the FSS downlink band at 37.5-42.5 GHz that the Commission has designated primarily for fixed service use is feasible -- is not a

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[5] Indeed, as TRW explained in the Petition, the nature of the interference that FSS systems would receive from fixed service systems, combined with the fact that FSS receivers from multiple systems will be deployed in any single fixed service service area, means that there is no way that a fixed service facility can offer protection as a way of making use of a band that is already allocated to or in use by FSS systems. *Id.* at 6.

[6] Contrary to FWCC=s contention (see FWCC Opposition at 6), this dichotomy in treatment, while not "co-equal," is nevertheless required. FSS systems that meet applicable power flux density limitations can protect co-frequency fixed service systems, and the only question is the extent, if any, to which the FSS earth stations would be protected from interference by fixed service stations. The same approach does not work in the opposite instance -- at least in FSS downlink bands -- as the fixed service systems would remain unable to protect FSS stations from interference.

reason to deny the Petition.[7] Notably, Lockheed Martin now shares TRW's belief -- which has been reflected in sharing studies the U.S. is hoping to finalize in the International Telecommunication Union (ITU) at a Working Party meeting that starts today -- that duly limited FSS use of the 38.6-40 GHz and 41-42.5 GHz bands is both desirable and practicable. Moreover, WinStar's reference to one party's views on FSS/fixed service sharing in the 47.2-48.2 GHz band, which is an FSS uplink band and therefore subject to very different sharing considerations, is completely unavailing in this regard.[8]

It is palpably clear from WinStar's Opposition that it would strongly prefer that satellite systems be completely excluded from the 38.6-40 GHz band segment that was designated in the *V-Band Allocation Order* for fixed service use.[9] While WinStar's self-interest makes this preference understandable, the fact remains that it is simply not reasonable. If, as TRW and Lockheed Martin maintain, FSS use can be made of the 38.6-40.0 GHz and/or the 41-42.5 GHz

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7 *See* WinStar Opposition at 8.

8 *See id*. at 8 n.19.

9 To the extent, however, that WinStar's Opposition can be read as an argument for total exclusion of satellites from the band segments designated for wireless services (see WinStar Opposition at 15-17), its argument must be rejected as procedurally defective. It is both an untimely petition for reconsideration (the filing deadline established under the Commission's Rules was February 16, 1999, and WinStar filed nothing), and it reargues points WinStar attempted unsuccessfully to argue in response to the notice of proposed rule making in this proceeding. *See* 47 C.F.R. § 1.429; s*ee* WinStar Reply Comments, IB Dkt. 97-95, at 5 (filed June 3, 1997) (arguing that "elimination of the domestic satellite allocation in the 38.6 - 40.0 GHz band is entirely appropriate . . ."). The Commission has never ordered that the licensing of systems in these bands would be exclusively to wireless systems. Moreover, no rules on disaggregation of licenses have been proposed or adopted, and no prohibition was imposed on a satellite operator becoming a licensee of a wireless area at auction and using it for satellite purposes. In each of the latter instances, at least, a satellite company would be a licensee in a band designated for wireless use. The Petition was filed to ensure that opportunities such as these are fully reflected in the final decision in the instant proceeding.

bands without exceeding applicable interference limits and without requiring protection from the fixed service, such use should be permitted.

WinStar=s objections, which are repeated at various points throughout its Opposition, fall into two categories: first, WinStar seems skeptical that FSS operators would be satisfied with operating in the 38.6-40 GHz band on the basis discussed;[10] and second, WinStar contends that even the limited type of FSS use contemplated would somehow impede the ability of wireless licensees to develop fully their services in the 38.6-40 GHz band.[11] Both types of objections are unfounded.

TRW and Lockheed Martin have identified in the Petition and reiterated here the conditions under which FSS use of the 38.6-40 GHz and 41-42.5 GHz bands could be made. These conditions are reflected in ITU studies and would likely be part of any satellite licenses that are issued (with the possible exception of licenses that are acquired through private agreement with a wireless licensee). High-density applications in the fixed service in this frequency range are expected by WinStar and the Commission to follow an "island" type of deployment.[12] This means that there will be numerous pockets of relatively small geographic service areas where wireless deployment densities will be high, and vast areas (due to the shortness of wireless path

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10 *Id.* at 10 (A[i]t is highly unlikely that TRW will spend significant resources to develop and launch a satellite system, but then be willing to accept interference from terrestrial wireless providers≅).

11 *Id.* at 13.

12 *See* Document 4-9S/61-E, a United States contribution to the September/October 1998 meeting of ITU-R Working Party 4-9S (dealing with FSS/fixed service sharing issues). This contribution, which was authored by WinStar, describes fixed service deployment conditions for the band 38.6-40 GHz as "characterized by 'islands' serving areas of high population density, concentrated industrial activity or campus settings," and further notes that "FSS earth station deployment outside areas of dense FS deployment should present few coordination problems." *Id.* at 4-5.

lengths and other limiting technical conditions) where little or no wireless use will be made.[13] Most license areas in the U.S. will contain both islands of deployment and the in-between areas, and the Commission=s apparent plan is to cover the entire United States with license areas.

Coordination between FSS receivers and wireless systems would not be appropriate in or near areas of dense deployment. TRW and Lockheed Martin are not trying to secure the ability to put FSS earth stations that would operate in the 38.6-40 GHz or other designated wireless bands in downtown Manhattan, inside the Washington Beltway, along Chicago=s Loop, atop the Boston Garden, or anywhere else within or even close to a likely wireless service island. Coordination will, however, be much easier in areas of light or no deployment of wireless systems. Indeed, in some auctions that the Commission has held, licenses for some smaller, remote markets have gone unclaimed.

As a general principle, FSS operators should have the opportunity -- whether it is through negotiations with wireless licensees or otherwise -- to find "in-between" areas unlikely ever to be served by wireless systems in the subject frequency ranges that have access to fiber optic cable connections. These locations would be suitable for the types of limited gateway operations contemplated here, and would be a big step toward alleviating the type of spectrum shortfall to which the other petitioners for reconsideration of the *V-Band Allocation Order* have pointed.[14] Indeed, given the limited amount of bandwidth for FSS use at V-band, as well as its frequency use characteristics, there are no other available bands for feeder links that would be wide enough to

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13 "Line-of-sight hop lengths are limited to a few kilometers due to propagation conditions and high availability requirements." Document 4-9S/61-E at 3.

14 *See* Petition for Reconsideration of GE American Communications; Petition of Hughes Communications, Inc.

accommodate the significant backhaul capacity that will be required for the large remote gateway earth stations that could be implemented in this band.

In those instances where an FSS provider may wish to place an earth station in a remote area without reaching an agreement with the area=s wireless license holder or without acquiring the rights to do so at auction, there still is no risk of a "hole" to the wireless licensee. TRW and Lockheed Martin recognize in that instance that the wireless provider has the right to cause interference to the FSS earth station, and the FSS operator would be out of luck if it were unable to negotiate a protection arrangement with the wireless operator. TRW and Lockheed Martin reiterate, however, that under the conditions they have identified, there is no risk of interference to FS operations (beyond the acceptable levels permitted under the ITU regulations).

TRW's Petition was motivated by the fact that under the Commission's regulatory scheme for the wireless service in this frequency range, there is a vast and undeniable difference between "license" areas and "service" areas. The former has no "in-between" areas, while the latter does, and will continue to do so. Under this circumstance, it makes good policy sense for the Commission to expressly endorse the conditioned provision of FSS services that will not unduly constrain wireless build-out pursuant to their licenses.[15] WinStar=s effort to dismiss such highly

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[15] It is the appreciation for the nature of the wireless service in this band (the real nature of the service, not the exaggerated one alluded to by WinStar in its Opposition) that gives rise to TRW=s and Lockheed Martin=s beliefs that FSS use can be made of this band under the conditions suggested. *See* WinStar Opposition at 11 (questioning why satellite operators would be willing to spend billions of dollars building out their systems if they did not receive interference protection). TRW and Lockheed Martin note, however, that -- contrary to WinStar=s allusion -- although subject to pfd limitations that may restrict operations, the use the FSS would make of the band is not "secondary" use; it is a co-primary use of the band that is fully consistent both with the international and domestic tables of frequency allocations, and with the designations the Commission has made in the *V-Band Allocation Order*.

efficient spectrum use as speculative, or as something that would devalue 38 GHz wireless licenses, is unsupported, and must be rejected.

The FSS use contemplated here will not interfere in any way with the right of wireless licensees to build out their systems (a process by which a wireless licensee will seek to cover its license area=s pockets of dense population, rather than a process by which a wireless licensee will seek to cover its license area). WinStar=s assertions about holes in the wireless networks and the devastating impact of exclusion zones are thus nothing more than hyperbole, and are out of step with the emerging pattern of wireless use in the band. It is these unfounded assertions, and not TRW=s Petition, that must be rejected.

As a final point, TRW and Lockheed Martin urge the Commission to reject WinStar=s suggestion that satellite use of the designated wireless bands must be foregone because it could have a retarding impact on future evolution of the fixed service.[16] This suggestion is speculative (even if account is taken of the fact that the stated fixed service criteria for these bands tends to be in a near constant state of evolution). Moreover, WinStar ignores the fact that the ITU Radio Regulations specify power flux density levels for geostationary FSS systems in the 37.5-40.5 GHz band which are the same as the ones the United States is now proposing to have the ITU recommend for application to all of the V-band non-geostationary FSS systems for which applications are pending before the Commission. The geostationary power flux density limits are not the subject of ITU review and were established before Winstar obtained its licenses. These limits thus set the interference parameters which Winstar and all other fixed service providers must necessarily consider in designing their systems. Any fixed service system that requires greater protection than what is afforded by the power flux density levels now in the ITU Radio

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[16] WinStar Opposition at 9.

Regulations for the 37.5-40 GHz band does so with full knowledge that it may suffer unwanted interference. Conversely, if the Commission were to further limit GSO operations notwithstanding the existing power flux density standards, it would be erecting barriers that had not previously been anticipated by either terrestrial fixed or satellite operators.

CONCLUSION

On the basis of the foregoing discussion, TRW and Lockheed Martin call upon the Commission to reject the Oppositions filed in this proceeding by WinStar and FWCC, and to grant the Petition for Reconsideration/Clarification that was filed by TRW and is supported here by Lockheed Martin. There is no justification in fact or policy for the extreme and self-serving result advocated by the wireless interests, and every reason to proceed with the limited, rational, constructive, and efficient approach for FSS use of bands between 37.5 and 42.5 GHz that the Commission has designated for wireless use.

Respectfully submitted,

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April 21, 1999

CERTIFICATE OF SERVICE

I, Cristina M. Lirag, hereby certify that a true and correct copy of the foregoing "Joint Reply of TRW Inc. and Lockheed Martin Corporation," was sent this 21st day of April, 1999, by first class mail, postage prepaid, to the following:

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